

What is claimed:

1. A multifunctional food preparation apparatus for the preparation of food products, comprising:

a preparation chamber having a top and a bottom;

5 at least one rack within the cooking chamber to support products to be prepared in the oven;

a main heat source positioned adjacent the top of the preparation chamber;

a collection pan within the cooking chamber and positioned below the at least one rack, said collection pan disposed so as to collect by-products rendered
10 from the food products during preparation;

a steam source positioned below the collection pan;

a flavor generator positioned adjacent the bottom of the preparation chamber below the at least one rack;

at least one air flow path within the preparation chamber to allow for the
15 circulation of air around the at least one rack; and

a programmable controller to control the heat source, the steam source and the flavor generator, the controller being programmable to operate any one of the heat source, the steam source and the flavor generator in any predetermined sequence, and for any predetermined duration of time to provide optimum
20 preparation and flavoring of the products.

2. The oven of claim 1 further comprising an external flue in fluid communication with the preparation chamber, said flue being appropriately

dimensioned so as to maintain a predetermined pressure within the preparation chamber.

3. The oven of claim 2 wherein the flue further comprises a tubular body defining an internal bore, said tubular body having a first end in fluid
5 communication with the preparation chamber and a second end defining an opening into the atmosphere, the internal bore and said opening in said second end of the tubular body each having a predetermined internal diameter that combine to maintain the predetermined pressure within the preparation chamber.

4. The oven of claim 3 wherein the internal diameter of the internal bore
10 is approximately 2 inches and the internal diameter of the opening in the second end of the tubular body is approximately $\frac{3}{4}$ inch.

5. The oven of claim 4 wherein the preparation chamber has a volume of between approximately 14 cubic feet and approximately 18 cubic feet.

6, The oven of claim 1 wherein the at least one air flow path is
15 positioned so as to direct heated air below the collection pan to maintain the collection pan at a sufficient temperature to retard spoilage of the by-products collected in the collection pan.

7. The oven of claim 1 wherein the at least one airflow path is positioned so as to direct airflow to the flavor generator.

20 8. The oven of claim 1 wherein the steam source further comprises a reservoir and a heat source.

9. The oven of claim 8 wherein the steam source heat source is an electric heating element.

10. The oven of claim 8 wherein the steam source further comprises a shield positioned over the reservoir.

11. The oven of claim 1 wherein the flavor generator further comprises a flavoring receptacle and a heat source.

5 12. The oven of claim 11 wherein the flavor generator heat source further comprises an electric heating element.

13. The oven of claim 1 wherein the main heat source further comprises an electric heating element and a fan.

14. A cooking oven, comprising:
10 a cabinet having a top wall, a first side wall, a second side wall and a bottom wall, said recited walls defining an inner cooking chamber;

at least one rack within the cooking chamber to support products to be cooked;

a primary heat source positioned adjacent the cooking chamber top and
15 above the at least one rack;

a collection pan within the cooking chamber and positioned below the at least one rack, said collection pan disposed so as to collect by-products rendered from the cooked products;

a steam source positioned below the collection pan;

20 an external flue in fluid communication with the cooking chamber, said flue being appropriately dimensioned so as to maintain a predetermined pressure within the cooking chamber;

a flavor generator positioned adjacent the bottom of the cooking chamber below the at least one rack; and

a programmable controller to control the primary heat source, the steam source and the flavor generator, the controller being programmable to operate the
5 primary heat source, the steam source and the flavored smoke generator in any predetermined sequence, and for any predetermined length of time to provide optimum cooking and flavoring of the products.

15. The oven of claim 14 wherein the flue further comprises a tubular body defining an internal bore, said tubular body having a first end in fluid opening
10 into the cooking chamber and a second end defining an opening into the atmosphere, the internal bore and said opening in said second end of the tubular body each having a predetermined internal diameter that combine to maintain the predetermined pressure within the cooking chamber.

16. The oven of claim 15 wherein the internal diameter of the internal
15 bore is approximately 2 inches and the internal diameter of the opening in the second end of the tubular body is approximately $\frac{3}{4}$ inch.

17. The oven of claim 16 wherein the inner cooking chamber has a volume of between approximately 14 cubic feet and approximately 18 cubic feet.

18. The oven of claim 14 wherein the collection pan further comprises
20 drainage apparatus that allows for removal of the collected by-products from the pan without the removal of the pan from the cooking chamber.

19. The oven of claim 14 further comprising at least one air flow path within the cooking chamber for the circulation of heated air, steam and generated flavoring.

20. The oven of claim 19 wherein the at least one air flow path is positioned to provide heated air below the collection pan so as to maintain collected by-products in the collection pan at sufficient temperature to retard spoilage of the collected by-products.

21. The oven of claim 14 wherein the primary heat source comprises a heating element and an air circulation fan.

22. A food preparation oven, comprising:
a preparation chamber having a top and a bottom;
at least one rack within the preparation chamber to support products to be cooked;
a primary heat source positioned adjacent the preparation chamber top and above the at least one rack;
a collection pan within the preparation chamber and positioned below the at least one rack, said collection pan disposed so as to collect any by-products rendered from the cooked products;
a steam source is positioned below the collection pan, the steam source including a fluid reservoir and a heating element to provide controlled heat to the reservoir to create steam.;

a flavor generator positioned adjacent the bottom of the preparation chamber including a ventilated receptacle flavoring agents, and a heating element under the receptacle;

at least one air flow path within the cooking chamber to allow for the
5 circulation of heated air and steam and flavor around the at least one rack; and

a programmable controller to control the primary heat source, the steam source and the flavor generator, the controller being programmable to operate the primary heat source, the steam source and the flavor generator in any predetermined sequence, and for any predetermined length of time to provide
10 optimum preparation and flavoring of the product.

23. The oven of claim 22 further comprising an external flue in fluid communication with the preparation chamber, said flue being appropriately dimensioned so as to maintain a predetermined pressure within the cooking chamber.

15 24. The oven of claim 23 wherein the flue further comprises a tubular body defining an internal bore, said tubular body having a first end in fluid opening into the preparation chamber and a second end defining an opening into the atmosphere, the internal bore and said opening in said second end of the tubular body each having a predetermined internal diameter that combine to maintain the
20 predetermined pressure within the preparation chamber.

25. The oven of claim 24 wherein the internal diameter of the internal bore is approximately 2 inches and the internal diameter of the opening in the second end of the tubular body is approximately $\frac{3}{4}$ inch.

26. The oven of claim 24 wherein the preparation chamber has a volume of approximately 14 cubic feet to approximately 18 cubic feet.

27. A multifunctional cooking oven, comprising:

a cooking chamber having a top wall, a bottom wall, a first side wall and a
5 second side wall;

a first rack mounting apparatus on the first side wall and a second rack mounting apparatus on the second side wall, each said rack mounting apparatus defining at least one air flow path;

a plurality of racks in a vertical array within the cooking chamber, each rack
10 of said plurality of racks suspended between the first and second rack mounting apparatus so as to provide support for products to be cooked in the oven;

a primary heat source positioned adjacent the cooking chamber top wall and above the at plurality of racks, said primary heat source including a heating coil and an air circulation fan;

15 a collection pan within the cooking chamber and positioned below the at array of racks, said collection pan disposed so as to collect any by-products rendered from the products on the racks during preparation;

a steamer positioned below the collection pan, the steamer including a fluid reservoir and a heating element under the reservoir to provide controlled heat to
20 the reservoir to create steam ;

a flavor generator positioned adjacent the bottom wall of the cooking chamber and Including a ventilated receptacle for the deposition of flavoring agents and a heating element under the receptacle; and

a programmable controller to control the primary heat source, the steamer and the flavor generator, the controller being programmable to actuate the primary heat source, the steamer and the flavor generator in any predetermined sequence, and for any predetermined length of time, to provide optimum cooking and flavoring
5 of the product.

28. The oven of claim 27 wherein the at least one air flow path defined each rack mounting apparatus is disposed to direct heat to the collection pan.

29. The oven of claim 27 wherein the collection pan includes a drainage apparatus that allows drainage of the collected by-products from the collection pan
10 without removal of the collection pan from the cooking chamber.

30. The oven of claim 27 wherein the first and second rack mounting apparatus are removable.

31. The oven of claim 27 wherein the first and second rack mounting apparatus each include a plurality of air flow openings therein.

15 32. A cooking oven, comprising:

a cabinet having a top wall, a bottom wall, a first side wall and a second side wall, said recited walls defining a cooking chamber;

a first rack mounting apparatus in the cooking chamber attached to the first wall, said first rack mounting apparatus defining a first air flow path;

20 a second rack mounting apparatus in the cooking chamber attached to the second wall, said second rack mounting apparatus defining a second air flow path;

a plurality of racks for supporting food items to be cooked, said plurality of racks arranged in a vertical array between said first and second rack mounting apparatus;

5 a heat source at said top wall including a heating element and an air circulation fan;

a collection pan below said plurality of racks for the collection and retention of by-products rendered from the food items on the racks and positioned adjacent the first and second air flow paths to that heated air from the heat source is directed to the collection pan through the first and second air flow paths to maintain
10 the collection pan at a desired temperature;

a steam source beneath said collection pan, said steam source including a reservoir and a heating element;

a flavor generator adjacent the bottom wall, said flavor generator including a receptacle and a heating element; and

15 a flue on the top wall in fluid communication with the cooking chamber and the atmosphere, said flue having an internal diameter and a discharge opening sized to maintain desired heat and steam pressure within the cooking chamber.

33. The oven of claim 32 wherein the flue has an internal diameter of approximately 2 inches and a discharge opening to the atmosphere having an
20 internal diameter of approximately $\frac{3}{4}$ inch.

34. A method of producing a usable by-product from a food product, comprising:

placing the food product in an oven including at least one rack for supporting the food product, a by-product collection apparatus below the at least one rack, a convection heat source, a steam source, a flavor generator and a controller for
5 controlling the actuation and operation of the convection heat source, the steam source and said flavor generator;

actuating said convection heat source for a predetermined period of time;

actuating said steam source for a predetermined period of time;

10 actuating said flavor generator for a predetermined period of time;

subjecting the food product to heat, steam and flavor for said predetermined durations of time, whereby useable by-products of the food product are rendered from the food product as a result of said subjection to heat, steam and flavor;

collecting said rendered by-products in the by-product collection pan; and

15 removing said rendered by-products from said by-product collection pan for use.

35. The method of claim 34 wherein the steps of

actuating said convection heat source for a predetermined period of time;

actuating said steam source for a predetermined period of time;

20 actuating said flavor generator for a predetermined period of time, are performed in the recited sequence.

36. The method of claim 35 wherein the steps of

actuating said convection heat source for a predetermined period of time;

actuating said steam source for a predetermined period of time;
actuating said flavor generator for a predetermined period of time, are
performed simultaneously.

37. The method of claim 35 wherein said food product is selected from a
5 group of food products consisting of beef, pork, poultry, lamb, game and fish.